

REMARKS

Claims 2, 4, 5 and 7-11 are pending. Claims 1, 3, 6 and 12 have been canceled.

Claims 2, 4, 5, 7 and 11 have been amended to clarify the subject matter. No new matter has been added. In particular, claim 2 has been amended to clarify that "gas floats within said filter as bubbles and spreads said plurality of hollow fiber membranes outwardly, and deposits on the outer periphery of said plurality of hollow fiber membranes are removed therefrom by action of the fluid and the gas." Support for this feature can be found, for example, on page 13, lines 2-7 of the current application. Claims 4, 5 and 7 have been amended in a manner similar to claim 2. Claim 11 has been amended for proper antecedent basis.

Pursuant to 37 CFR § 1.116, applicants believe that the amendments are necessary to consolidate the features of the claimed invention. In particular, the amendments clarify that fluid and air are injected into the device and this combination is used to remove deposit from the fluid. Such an amendment is based, in part, on the features of original claim 11.

Claim Rejections 35 USC 103

Claims 1 to 12 have been rejected under 35 U.S.C 103(a) as being unpatentable over Patent Abstract of Japan JP 07 060074 ("the '074 reference") in view of Zha US patent No. 6,156,200 ("the Zha patent").

Claims 1, 3, 6 and 12 have been canceled, so the rejection of these claims is moot.

Applicants have amended claim 2 to clarify the subject matter. Claim 2 as amended is not taught or suggested by the prior art references for at least the following reasons.

Amended claim 2 recites:

2. (Currently Amended) A filter device comprising:

a filter cylinder;

a plurality of hollow fiber membranes, each having a bundled end and a free end, and said free ends arranged to spread within said filter cylinder; and

injection means for injecting fluid and gas to a central portion of said plurality of hollow fiber membranes and causing the fluid and gas to radiate outwardly from the central portion, thereby injecting the fluid and gas to an interior of said filter cylinder under pressure,

wherein the gas floats within said filter as bubbles and spreads said plurality of hollow fiber membranes outwardly, and
deposits on the outer periphery of said plurality of hollow fiber membranes are removed therefrom by action of the fluid and the gas. (Emphasis added.)

The above claimed combination including the bolded features are not taught or suggested by the prior art references for the following reasons.

The office action asserts that the Zha reference discloses the injection means as recited in claim 2. We respectfully disagree. The office action cites the passage in column 7, lines 13 to 22 to support its assertion:

To further improve distribution of air bubbles, a porous tube 16 can be inserted in the center of the cylindrical module 4. When **air** passes through porous tube 16, it produces uniform **bubbles** which pass out through the array of fibres scouring solids in the fibre member walls. It will be appreciated that more than one porous tube can be used and such tubes could be distributed throughout the bundle. Fibres of large pore size or made of non-woven material could be used as porous tubes within the bundle. FIG. 6 illustrates this form of module. (Emphasis Added)

That is, the Zha passage mentions that **air** passes through the porous tube to produce bubbles to scour solids on the fibre member. For example, Fig. 6 of the Zha reference shows a module 4 with a porous tube and holes 10 for feeding gas into the porous tube 17. However, it fails to disclose the injection of both **fluid and gas** as recited in amended claim 2 (and in original claim 11). In fact, the Zha reference does not contemplate the injection of a fluid because it only uses gas bubbles to scour solids on a fibre member. (See also column 6, lines 53 to 62) Thus, the Zha reference fails to teach or suggest the above features of amended claim 2.

Moreover, the Zha reference fails to teach or suggest a device where “deposit ... is removed by the fluid and the gas” as recited in amended claim 2. In the Zha reference, as explained above, solids are removed by using **only** gas. Thus, the Zha reference fails to disclose a technique where “deposit ... is removed by the fluid and the gas” as recited in amended claim 2.

Furthermore, the '074 reference also fails to teach or suggest the above claimed combination including the bolded features of amended claim 2, quoted above. Specifically, the office action acknowledged that the '074 reference fails to disclose an injection means for

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Page : 8 of 8

Attorney's Docket No.: 10417-091001 / F51-
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injecting gas and fluid as recited in amended claim 2. Thus, neither the '074 reference or the Zha reference, alone or in combination, teach or suggest the claimed subject matter of amended claim 2.


Claims 4 and 7 have been amended to include similar limitations similar to those of amended claim 2. Accordingly, amended claims 4 and 7 (and respective dependent claims) are also not taught or suggest by the cited prior art.

All of the pending claims are believed to be novel and unobvious over the cited prior art.

Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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